

THE BEES OF AUSTRALIA.

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(Continued from vol. vii., part iii., p. 218.)

HALICTUS Latreille.

The genus *Halictus* is found in every part of the world where bees exist, except in the far north, where the only bees are *Bombus*, and on certain groups of islands, as the Hawaiian Islands. It is rather easily distinguished by the venation of the wings, the marginal cell being pointed (not blunt as in *Nomia*), and the basal nervure strongly arched or bent. The species are excessively numerous, and often difficult to describe or identify. Thus the details of the sculpture, which afford excellent specific characters, are hard to express clearly in words. Australia is exceedingly rich in *Halictus*, and undoubtedly many remain to be described. The student is recommended to gather together as much material as possible, and then construct tables to separate all the species, regardless of their names. When this is done, the more evident characters of the various forms will be familiar, and then it will be much easier to use the literature. The tables given below, and the short accounts in the list of species, will usually not suffice for certain identification, but they will make it possible to exclude most of the species from the possibility of being identical with the one in hand. The Australian museums contain identified specimens of many of the species, including numerous types.

A paper in *Annals and Magazine of Natural History*, September, 1904, contains a table of F. Smith's species, so far as represented in the British Museum. Three Tasmanian species are lacking; they are separable thus:—

- | | |
|---|----------------------------|
| Nervures fuscous, antennae black, middle tergites white-tomentose at base | <i>familiaris</i> (Erchs.) |
| Nervures pale testaceous | 1. |
| 1. Female; margins of tergites narrowly rufopiceous | <i>orbatus</i> Sm. |
| Male; disc of thorax aeneous; flagellum fulvous beneath; apex of clypeus yellow | <i>cognatus</i> Sm. |
- (Probably male of *H. globosus* Sm.)

The above was compiled from the descriptions, but *H. orbatus* has since been recognised, and is given in the tables below.

In 1902 Robertson proposed the generic names *Chlorelictus* and *Evylaeus* for *Halictus* of rather small size, without hair-bands on the apical margins of the tergites, and with the outer recurrent and intercubital nervures perceptibly weakened. These have been accepted as valid subgenera in America, but they occur equally in the Old World, and may be observed in Australia.

The subgenus *Pachyhalictus* Cockerell was proposed in 1929 for the "Halicti nomiiformes" of Vachal and Blüthgen. The female is stout, with peculiar sculpture, and the male has short antennae. The typical species are Asiatic, but the Australian *H. stirlingi* Ckll. and *H. maitlandi* Ckll. belong to the same group.

A peculiar Australian group is typified by *H. macrops* Ckll. It is robust, with a very broad abdomen, although a male. A female of the same group has been described as *H. barretti* Ckll. (*Amer. Museum Novitates*, No. 346, p. 14); it has just the same sort of abdomen. Under the microscope the mesothorax of *H. macrops* shows sparse strong punctures on a non-sculp-

tured surface, while *H. barretti* shows weaker punctures on a minutely lineolate surface. *H. barretti* is from Victoria, *H. macrops* from Tasmania.

The species described by Friese are discussed in Amer. Museum Novitates, 343 (1929). The species collected by F. X. Williams in Queensland, and now in the Museum of Comparative Zoology, Harvard University, are described or recorded in Psyche, xxxvii., No. 2 (1930). Fourteen new forms, the types in the Queensland Museum, are described in Mem. Queensland Museum, x. (August, 1930). Eight species, belonging to the Australian Museum, are described or recorded in Records Australian Museum, xvii., No. 5 (1929).

The Australian species of *Halictus* are all confined to Australia. Vachal recorded *H. urbanus baudinensis* Ckll. from New Caledonia, but I am confident that this was an error. The species I obtained in New Caledonia (*H. polygoni* Ckll., *H. risbeci* Ckll., and *H. crotalariae* Ckll.) are all endemic.

Thorax at least partly metallic, blue or green.

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|--|-----|---|
| Abdomen wholly or partly red | 1. | (first tergite red in <i>limatiformis scrupulosus</i> Ckll.) |
| Abdomen not red | 15. | |
| 1. Mesothorax with large coarse punctures | | <i>punctatus</i> Sm. |
| | | (Mesothorax dull blue-green; see <i>brisbanensis</i> Ckll.) |
| Mesothorax with fine punctures | 2. | |
| 2. Abdomen very dark, practically black in middle, reddened at base and apex; femora black, with knees red | | <i>tatei</i> Ckll. |
| Abdomen not thus dark | 3. | |
| 3. Base of abdomen red | 4. | |
| Base of abdomen black (green in <i>vitripennis</i>), or with a very large black mark | 8. | |
| 4. Stigma pale testaceous | 5. | |
| Stigma brown or dark | 7. | |
| 5. Femora mainly black | | <i>vitripennis</i> Sm. |
| | | (Pale reddish stigma and dark femora, but mesothorax much darker, blue-green, and not polished <i>tarltoni</i> Ckll.) |
| Legs, including femora, pale clear red | 6. | |
| 6. Mesothorax somewhat shining | | <i>eyrei</i> Ckll. |
| Mesothorax shining bright emerald green; stigma dilute sepia | | <i>dotatus</i> Ckll. |
| 7. Stigma very dark | | <i>tatei</i> Ckll. |
| | | (Stigma dark reddish brown; head and thorax yellowish green, metathorax blue; apical third of abdomen infuscated; male <i>spheredopsis</i> Ckll.) |
| Stigma large, reddish, not dark | | <i>tarltoni</i> Ckll. |
| 8. Base of abdomen green | | <i>vitripennis</i> Sm. |
| Base of abdomen black or with a large black mark | 9. | |
| 9. At least tibiae and tarsi clear red | 10. | |
| Legs dark | 11. | |
| 10. Male; the shining mesothorax practically black, with very little metallic colour | | <i>tasmaniae</i> Ckll. |
| 11. Stigma very dark | 12. | |
| Stigma light reddish to pale testaceous | 13. | |
| 12. Mesothorax shining blue | | <i>oroniellus</i> Ckll. |
| Mesothorax dull blue-green (indications of large shallow punctures) | | <i>brisbanensis</i> Ckll., var. a. |
| 13. (All have black metathorax, and abdomen red at end.) | | |

- Abdomen with large black spots at extreme sides; mesothorax blue-green *raymenti* Ckll.
 Abdomen without such lateral spots 14.
14. Mesothorax green *erythrurus* Ckll.
 Mesothorax small, dark blue *erythrurus atrocyaneus* Ckll.
15. Males 16.
 Females 21.
16. Clypeus without a light mark; very small species 17.
 (Not very small, see *flindersi* Ckll.)
- Clypeus with a light band or mark 18.
17. Area of metathorax blue, scutellum green *kesteveni* Ckll.
 (See also *hilli* Ckll., about 6 mm. long.)
 Area of metathorax green, scutellum brassy *hackeriellus* Ckll.
 (Mesothorax brassy, see *microchalceus* Ckll.)
 (Near to *kesteveni*, hind tibiae and tarsi red, stigma dark
 *williamsi* Ckll.)
18. Head very large; mandibles yellow; flagellum light orange-ferruginous
 beneath *purnongensis* Ckll.
 Head ordinary 19.
19. Middle and hind tibiae red *dampieri* Ckll.
 Middle and hind tibiae mainly black 20.
20. Abdomen black *cognatus* Sm.
 Abdomen brownish-black, hind margins of tergites discolored; flagellum
 red *haematostoma* Ckll.
 Abdomen shining green *veronicae* Ckll.
21. Abdomen black or dark brown 22.
 Abdomen blue or green 36.
22. Legs clear red, including femora *eyrei darwiniensis* Ckll.
 (Tibiae and tarsi red *williamsi* Ckll.)
 At least the femora dark 23.
23. Abdomen more or less pruinose-hairy, and hind margins of tergites
 discolored 24.
 Abdomen shining black, hind margins of tergites not discoloured . .
 30.
24. Mesothorax brilliant peacock green; tibiae clear red
 *urbanus* Sm. (see also v. *baudiniensis* Ckll.)
 Mesothorax not so coloured 25.
25. (Mesothorax polished; flagellum bright red; male. *haematostoma* Ckll.)
 Mesothorax not polished 26.
26. (All have flagellum red beneath; it is dark brown beneath in
 *williamsi* Ckll.)
 Tegulae large, testaceous, colourless anteriorly; mesothorax dull and
 dark 27.
 Tegulae ordinary, small, darker 28.
27. Smaller; mesothorax dark blue; stigma pale testaceous . *inclinans* Sm.
 Larger; mesothorax dark green; abdomen may be slightly metallic . .
 *subinclinans* Ckll.
 (Mesothorax yellowish green, stigma dark *williamsi* Ckll.)
 (Close to *williamsi*, but mesothorax more shining, scutellum shining . .
 *suburbanus* Ckll.)
28. (Mesothorax rather bright green; abdomen distinctly metallic
 *holochlorus* Ckll.)
 Larger; mesothorax dark blue or greenish blue . . *subinclinans* Ckll.

- Smaller; mesothorax dark green 29.
29. Abdomen with dark red tegumentary bands *rufotinctus* Ckll.
Abdomen without such bands *mundulus* Ckll.
(Area of metathorax with conspicuous shining margin; first recurrent
nervure going to basal corner of third cubital cell . *luctificus* Ckll.)
30. Mesothorax polished 31.
Mesothorax with a dull surface 32.
31. Larger *demissus* Ckll.
Smaller *demissus* Ckll., var.
(Like *demissus*, but mesothorax a little duller, and area of metathorax
quite different *limatiformis* Ckll.)
32. Mesothorax not brightly coloured 33.
Mesothorax very brightly coloured, blue or green 34.
33. Larger; abdomen red at apex *saycei* Ckll.
Much smaller; metathoracic area blue *kesteveni* Ckll.
(Metathorax black; mesothorax dark blue *dorsicyaneus* Ckll.)
(Very small; mesothorax brassy green; hind tibiae red at base and
apex; abdomen faintly submetallic; male . . *microchalceus* Ckll.)
34. Mesothorax peacock blue *murrayi* Ckll.
Mesothorax green 35.
35. More strongly bluish green
. *urbanus* Sm. (see also var. *stradbrokensis* Ckll.)
(*H. urbanus* from Sydney is larger and appears different from the
others. The type locality is Champion Bay, W.A.)
(Mesothorax duller, etc. *suburbanus* Ckll.)
36. Mesothorax shining blue *flindersi* Ckll. (typical.)
Mesothorax rich dark blue, with dull surface 37.
Mesothorax green 38.
37. Stigma very dark, abbreviated apically *pavonellus* Ckll.
Stigma very pale testaceous, of usual shape *floralis* Sm.
38. (Extremely small, with brassy mesothorax and dark stigma; male . .
. *microchalceus* Ckll.)
Not extremely small, etc. 39.
39. Tibiae and tarsi red, or tibiae partly darkened 40.
At least tibiae dark 43.
40. Mesothorax with a dull surface 41.
Mesothorax shining 42.
41. Stigma pale testaceous *floralis* Sm.
Stigma dark brownish *subcarus* Ckll.
42. Mesothorax peacock green, approaching blue . . *behri transvolans* Ckll.
Mesothorax olive green *flindersi thor* Ckll.
(Related, but larger, with olive green instead of bluish abdomen . . .
. *luteoaneus* Friese.)
43. Area of metathorax with strong coarse rugae 44.
Area of metathorax finely sculptured 47.
44. (All have dark stigma.)
Mesothorax with oblique striae 45.
Mesothorax without oblique striae 46.
45. Mesothorax yellower green *caloundrensis* Ckll.
Mesothorax bluer green *caloundrensis leucurus* Ckll.
46. Head broader *flindersi* Ckll.
Head narrower; scape red at base *woodsii* Ckll.

- 47. Abdomen feebly metallic; hind margins of tergites reddened; stigma light rufotestaceous *holochlorus* Ckll. Abdomen strongly metallic 48.
- 48. Area of metathorax very long, very minutely sculptured . *dampieri* Ckll. Area crescentic, ordinary 49.
- 49. Clypeus very short, dark purplish *victoriae* Ckll. Clypeus much longer, brilliant green *callaspis* Ckll (stigma amber colour.)

The following supplementary tables of metallic species will further facilitate determination:—

- (1.) Abdomen green; tibiae and tarsi light ferruginous; male *dampieri* Ckll. Abdomen black 1.
 - 1. Small species, with red (or mainly red) tibiae; females 2. Larger species, with dark tibiae 3.
 - 2. Green of thorax very bright *urbanus* Sm. (see also *murrayi* Ckll., legs black.) Green of thorax obscure; stigma very pale yellowish *mundulus* Ckll. (See also *williamsi* Ckll., stigma dark, mesothorax dull yellowish green.)
 - 3. Mesothorax shining, sparsely punctured *demissus* Ckll. Mesothorax dull, much more closely punctured *subinclinans* Ckll. (*subinclinans* has flagellum fulvous beneath; mesothorax much duller than in male *cognatus*.)
- (2.) Abdomen red 1. Abdomen not red 3.
 - 1. Abdomen red at base Tasmanian species; specimen without head. Abdomen black at base 2.
 - 2. Mesothorax blue; stigma piceous *oxoniellus* Ckll. Mesothorax olive green (Brisbane specimens) or obscure brassy (Yallingup specimens); stigma yellowish, not dark *erythrurus* Ckll.
 - 3. Abdomen shining black *urbanus* Sm. Abdomen metallic 4.
 - 4. Larger; abdomen purple blue *caloundrensis leucurus* Ckll. (first regarded as a variety of *H. flindersi*.) (Very close to *H. behri transvolans*; differs by dark tibiae and tarsi, and angular tubercles. The dark legs and mandibles also distinguish it from true *H. behri*. It differs from *H. flindersi* by the light hair of caudal fimbria.) Smaller; abdomen dull green; male with long black antennae *dampieri* Ckll. (*H. hackeriellus* differs from *dampieri* by being smaller; scutellum brassy, contrasting with metathorax; antennae shorter.)

Thorax black, not metallic.

- (In *H. rowlandi* Ckll. the thorax is rufescent. In *H. ruficollis* Friese it is largely red.) Abdomen red, wholly or in part 1.

- (*H. niveorufus* Friese, female 10-11 mm. long, has red abdomen.)
 Abdomen not red 7.
1. Scutellum and postscutellum densely covered with fulvous tomentum; abdomen black with two broad red bands; female . . . *doddi* Ckll.
 Scutellum and postscutellum not so covered 2.
 2. Abdomen entirely red from base to apex, at most (*H. clarigaster*) somewhat dusky on apical half 3.
 Abdomen not entirely red 4.
 3. Mesothorax very coarsely punctured; tibiae and tarsi pale red
 *ewarti* Ckll.
 Mesothorax very finely punctured; tibiae and tarsi mainly dark
 *clarigaster* Ckll.
 (*H. blandulus* Ckll., from King George's Sound, has the abdomen entirely red.)
 4. Abdomen red with shining black base; very small female
 *basilucens* Ckll.
 Abdomen darkened or black apically 5.
 5. Abdomen very broad, dull red, dark brown at base and apex; female *cyclurus* Ckll.
 (Abdomen with broad red bands *mesembryanthemi* Ckll.)
 Abdomen narrow; males 6.
 6. Red almost confined to second tergite; stigma dark brown
 *hedleyi* Ckll., var. a.
 Red much more extensive; stigma light reddish with a dark margin
 *tasmaniae* Ckll.
 (Male with abdomen largely red *disclusus* Ckll.)
 (*H. rufibasis* Ckll. has abdomen beyond base of third tergite black.)
 7. First tergite with a strong median carina; abdomen with white hair-spots; female *mirandus* Ckll.
 (*H. alboguttatus* Friese has white spots at sides of tergites 2 to 4.)
 Without such characters 8.
 8. Males 9.
 (See also *clelandi* Ckll., *warburtoni* Ckll., *waterhousei* Ckll., and *isthmatis* Ckll.)
 Females 35.
 9. Tegument of clypeus entirely black 10.
 Clypeus with a light mark 12.
 (Male 8 to 9 mm.; clypeus yellowish-white apically. *obscuripes* Friese.)
 10. Tegulae black; face broad; supraclypeal area very prominent; clypeus is a little pallid apically, when looked at from below
 *bursariae* Ckll.
 Tegulae rufous; face covered with white hair 11.
 11. Area of metathorax entirely dull; larger species
 *clariventris* Friese (my specimen lacks abdomen.)
 Area of metathorax with a shining rim; very minute species
 *niveifrons* Ckll.
 (Very small; extreme edge of clypeus hardly noticeably pallid; first recurrent nervure joins third cubital cell . . . *micridoneus* Ckll.)
 Very broad face and abdomen; aspect of a female . . . *macrops* Ckll.
 (A related female is *H. barretti* Ckll.)
 (Allied, with long antennae *H. euryurus* Ckll.)
 12. Head extremely large and broad, broader than thorax; clypeal yellow with a median upward extension; legs mainly red

- *pachycephalus* Ckll.
 Head more ordinary 13.
13. Flagellum of antennae clear red beneath 14.
 (Flagellum clear red beneath, last three joints black; a small
 * species *picticornis* Ckll.)
 Antennae dark 15.
14. Extremely minute; anterior tibiae and tarsi light red . . *forticornis* Ckll.
 Larger; anterior tibiae black; abdomen broad; basitarsi creamy
 white *victoriellus* Ckll.
 (The male *H. mesembryanthemi* Ckll., with white basitarsi, is hardly
 different.)
 (*H. clariventris* Friese differs from *H. victoriellus* by the broader, very
 dull mesothorax, all black tegument of clypeus, and dense white
 hair on face.)
15. Large; anterior wing 7.8 mm.; second cubital cell very broad; legs
 black *leucorhinus* Ckll
 (*H. lanarius* Sm. has anterior wing 6.4 mm.)
 Much smaller 16.
16. Hind tibiae and tarsi red 17.
 At least hind tibiae dark 22.
17. Hind margins of tergites pallid *leai* Ckll.
 Hind margins of tergites not pallid 18.
18. Abdominal tergites, at least the second, with laterobasal hair-
 patches *dolichocerus* Ckll.
 Abdomen without such patches 19.
19. Larger; mesothorax very highly polished on disc; labrum yellow . . .
 *mirandus* Ckll.
 Smaller (*H. bicingulatus* may be large); mesothorax dullish, or shining
 posteriorly; labrum not yellow 20.
20. Tegulae piceous, with a red spot; scutellum highly polished; area of
 metathorax large, entirely dull *sanguinipes* Ckll.
 Tegulae clear rufofulvous 21.
21. Apical part of wings strongly dusky; stigma more pointed
 *haematopus* Ckll.
 Wings not thus darkened; stigma more obtuse . . . *bicingulatus* Smith.
 (These two are very close, but appear distinct.)
22. Stigma dark; all tarsi pale red *blackburni* Ckll.
 (If tarsi pale (not red), and stigma dark, see *forresti* Ckll., which is
 much larger.)
 (With dusky stigma, and very slender dull red tarsi . . *plebeius* Ckll.)
 Stigma not dark, or if so, tarsi not pale red 23.
23. Area of metathorax very coarsely sculptured; tarsi whitish
 *forresti* Ckll.
 Area not thus coarsely sculptured 24.
24. Abdomen very broad; hair bands (interrupted in middle) at bases of
 second and third tergites; face covered with white hair; stigma
 light reddish *expansifrons* Ckll.
 Abdomen otherwise, though sometimes broad 25.
25. At least hind basitarsi black or dark brown (dark dusky red in *H.*
bursariae) 26.
 Tarsi pallid or reddish 28.
26. Smaller; abdomen broad, hairy, hind margins of tergites paler;
 mesothorax polished *cambagei* Ckll.

- (See here also *H. pulvitectus* Ckll. (clypeal band cream colour), *H. viridarii* Ckll. (mesothorax dull), and *H. sculpturatus* Ckll. (smallest; abdomen shiny black, not hairy).)
- Larger; abdomen black, robust, but not specially broad 27.
27. Clypeal mark lemon yellow; abdomen dull, with very broad shining hind margins of tergites *kurandensis* Ckll.
Clypeal mark cream colour; abdomen shining all over; the abdomen much more robust than that of *lanariellus*, and stigma darker *spenceri* Ckll.
Clypeal mark small, whitish; abdomen hairy *lanarius* Smith.
Clypeal mark whitish, small; abdomen narrower than in *lanarius*, less distinctly punctured, and not so hairy *lanariellus* Ckll.
(*H. excusus* Ckll. runs to *lanariellus*, but differs by the entirely dull mesothorax; *H. subplebeius* Ckll. is small; abdomen shining black, not hairy; hind tarsi very dark reddish.)
28. Hind margins of second and third tergites narrowly but conspicuously red; tarsi clear red; stigma pallid; clypeal mark whitish *idoneus* Ckll.
Hind margins not thus red 29.
29. Excessively small, with pale labrum and partly cream-coloured mandibles; head large for size of insect *cyclognathus* Ckll.
(Face much narrower *micridoneus* Ckll.)
Larger; mandibles different 30.
30. Anterior tibiae clear red in front; area of metathorax with a shining rim *repertulus* Ckll.
(If tibiae partly pale in front, area without shining rim, see *idoneus* Ckll.)
Anterior tibiae not clear red in front 31.
31. Stigma pallid, with dark margin; area appears without shining rim, but seen from behind, shows a shining margin *idoneus* Ckll.
(Much smaller *micridoneus* Ckll.)
Stigma with solid colour, dark or reddish 32.
32. End of abdomen with a bright red rounded plate; face broad *repertus* Ckll.
(Compare *H. isthmalis* and *H. cambagei*; the former has red tibiae, in the latter neither tibiae nor tarsi are red; *repertus* has red tarsi.)
End of abdomen without such a plate 33.
33. Mesothorax dull *blackburni* Ckll.
Mesothorax shining 34.
34. Light mark on clypeus very obscure; supraclypeal area forming a flattened, highly polished plate *bursariae* Ckll.
Clypeus with a very distinct mark; supraclypeal area not peculiar; smaller species *plebeius* Ckll.
(Tarsi very dark reddish *subplebeius* Ckll.)
35. Postscutellum and sides of pronotum densely covered with yellow or reddish tomentum; large species *musicus* Ckll.
(*H. waterhousei* Ckll. is allied.)
Not thus ornamented 36.
36. Large or rather large species, the abdomen with red or fulvous bands 37.
Smaller species, or abdomen without such bands 40.
37. Postscutellum not covered with tomentum, but a cuneiform mark of

51. Abdomen very hairy, especially on third and fourth tergites; area of metathorax very finely sculptured *lanarius* Smith.
(A variety with black tegulae occurs at Tooloom, N.S.W.)
(Very similar, but smaller, with much more finely punctured mesothorax *instabilis* Ckll., var. a.)
Abdomen not thus hairy 52.
52. Area of metathorax large, dull, not plicate *instabilis* Ckll., type.
(Area very feebly plicate.
Abdomen broad, dullish, hind margins of tergites subrufescent
. *instabilis* Ckll., var. a.)
Abdomen narrower, shining pure black *seminitens* Ckll.)
Area distinctly plicatulate 53.
53. Basal bands of abdomen pure white, narrowed or broken
in middle 54.
Basal bands of tergites greyish, broad and continuous on third and fourth 56.
54. Area of metathorax strongly shining, plicate, concave, not pointed behind *circumdatus* Ckll.
Area dull 55.
55. Area very large, delicately sculptured all over, little concave
. *asperithorax* Ckll. (var. ?)
(Allied but smaller, with narrower, shining abdomen. *seminitens* Ckll.)
Area of metathorax short, concave, moderately pointed behind; wings brownish *littleri* Ckll.
56. Tegulae pure black; mesothorax posteriorly with large punctures on a shining ground *eboracensis* Ckll.
Tegulae dark reddish; area pointed behind 57.
57. Larger; mesothorax dull, with coarse punctures *seductus* Ckll.
Smaller; mesothorax shining, with small punctures
. *repraesentans* Smith.
(Differing by area not at all pointed behind *lanariellus* Ckll.)
(Area large and dull, not at all pointed behind *instabilis* Ckll. var. a.)
(With clear white bands of tomentum at bases of second and third tergites *griseovittatus* Ckll. var.)
58. Tergite 4 with fine thin pruinose pubescence all over 59.
Tergite 4 not thus covered 61.
59. Smaller; area of metathorax shining at sides; mesothorax shining
. *plebeius* Ckll.
(Small, with flagellum bright red beneath *picticornis* Ckll.)
Larger; area wholly dull 60.
60. Mesothorax dull *granulithorax* Ckll.
(Allied is *H. willsi* Ckll., but second cubital cell different.)
(Very near *H. granulithorax*, but smaller; first tergite more shining; scutellum dull except on anterior margin *clariventris* Friese.)
(The first tergite is excessively densely punctured all over in *granulithorax*, but minutely transversely lineolate in *clariventris*.)
Mesothorax shining, but closely punctured *pulvitectus* Ckll.
(Area of metathorax large, glistening, finely sculptured all over
. *imitans* Ckll.)
61. Hind tarsi red; small species with reddened wings *speculellus* Ckll.
(Larger, with shining black abdomen *exceptus* Ckll.)
Hind tarsi not red, or if dusky reddish, much larger
species 62.

62. Small species, 5.5 to 6.5 mm. long 63.
Larger, and usually more robust 66.
63. Tegulae pale testaceous; mesothorax highly polished; second cubital cell broad; outer intercubitus and recurrent nervures hardly visible; the microscope shows the metathoracic area minutely reticulate *mediopolitus* Ckll.
Tegulae rufous to rufopiceous 64.
64. Face not conspicuously hairy 65.
(Male; face very broad, conspicuously white-hairy; second cubital cell very narrow; microscope shows area with vermiform rugae all over *macrops* Ckll.)
65. Tegulae red *semipolitus* Ckll.
Tegulae practically black *semipolitus expulsus* Ckll.
(The microscope shows that *semipolitus* has the metathoracic area with strongly wrinkled rugae on basal half. In *expulsus* the area is finely reticulate on basal half, and beyond that minutely tessellate; also the second cubital cell is narrower, especially above.)
(Compare also *H. victoriellus* Ckll. and *H. helichrysi* Ckll.)
66. Tegulae clear rufous; mesothorax dull; second cubital cell broad 67.
Mesothorax shining, or tegulae very dark 70.
67. (In *H. opacicollis* and *H. instabilis* var. b. the tegulae are darker than in the others.)
Wings reddish 68.
Wings not at all reddish 69.
68. Larger; abdomen very broad, with a very broad band of pale grey tomentum at base of third tergite *instabilis* Ckll., var. b.
Smaller; abdomen not so broad, and basal band of third tergite hidden in middle; area of metathorax very large, with very fine longitudinal plicae, between them finely tessellate *opacicollis* Ckll.
69. Sides of mesothorax posteriorly with areas of large punctures on a shining ground; area of metathorax with very fine irregular plicae all over, and microscopically tessellate between the plicae *orbatus* Smith.
Mesothorax dull all over; area of metathorax large, minutely reticulate, at sides with straight plicae *granulithorax* Ckll.
70. Second and third tergites with hind margin narrowly rufous or pallid 71.
Second and third tergites with margin black, or with a broad dark reddish suffusion 73.
71. Flagellum bright chestnut red beneath; area of metathorax with very fine wrinkled plicae all over *helichrysi* Ckll.
(What I recorded from Bribie Island as *helichrysi*, var., was *pulvitectus*.)
Flagellum much darker 72.
72. Wings reddish; area of metathorax with fine rugae all over, having little projections at sides, as in *H. imitans* *pulvitectus* Ckll.
Wings not reddish; area of metathorax with fine wrinkled rugae, producing a reticulation; scutellum finely and densely punctured *victoriellus* Ckll.
(The last three are very closely allied; possibly to be considered races of one species.)

- (Allied to *victoriellus*, but smaller, and first tergite smooth)
73. Scutellum large, dullish, not bigibbous; abdomen very broad; area of metathorax with fine weak plicae on basal half only, no cross striae on apical middle *barretti* Ckll.)
(Var. a. has cross-striae on apical middle of area.)
- Scutellum polished, often more or less bigibbous 74.
74. Area of metathorax with a conspicuous shining rim 75.
Area without such a shining rim 76.
75. Hair-band of fourth tergite extremely broad, covering all of tergite except depressed portion; area of metathorax with very fine irregular plicae all over *lanariellus* Ckll.
Hair band of fourth tergite narrow, basal; area of metathorax with very fine wrinkled rugae, producing a reticulation
. *supralucens* Ckll.
76. Fourth tergite pruinose-pubescent all over; area of metathorax with fine distinct plicae, having little projections at sides in *pulvitectus* style; scutellum well punctured *imitans* Ckll.
Fourth tergite not pubescent all over 77.
77. Basal bands of tergites 2 and 3 in good specimens broad and very conspicuous; area of metathorax with very fine wrinkled rugae, forming a fine reticulation, but not reaching apical margin; scutellum densely punctured; second cubital cell broad, receiving recurrent nervure at apical corner *griseovittatus* Ckll.
Basal bands not thus conspicuous 78.
78. Mesothorax well punctured; area of metathorax shorter and well plicate as seen under lens, the microscope shows fine vermiform rugae, failing apically, and straight plicae at sides
. *confusellus* Ckll.
(Mesothorax dull, very coarsely punctured *evasus* Ckll.)
Area of metathorax much larger, with finer sculpture, very fine plicae, only regular on basal part *seminitens* Ckll.
(Hind tarsi dark red; wings quite dark *exceptus* Ckll.)

Supplementary tables of black *Halictus*.

Table 1. (Males.)

- Lower margin of clypeus not yellow; aspect of a female. *macrops* Ckll.
Lower margin of clypeus yellow 1.
1. Very small, less than 5 mm. long; tarsi yellow *forticornis* Ckll.
Larger, at least over 5 mm. 2.
2. Tarsi black *spenceri* Ckll. and *lanarius* Sm.
Tarsi red or yellow 3.
3. Stigma ferruginous; head broad and massive *pachycephalus* Ckll.
Stigma fuscous 4.
4. Small species; antennae not especially long *blackburni* Ckll.
Larger; antennae very long 5.
5. Mesothorax shining *dolichocerus* Ckll.
Mesothorax dull *haematopus* Ckll.

Table 2. (Males.)

- Clypeus all dark 1.
Clypeus with a light marginal band 3.
1. Antennae rather short; face very hairy *niveifrons* Ckll.
Antennae very long 2.

- Apical part of area very shiny *circumdatatus* Ckll.
3. Mesothorax very strongly punctured; tegulae rufotestaceous; scutellum with very minute punctures and scattered larger ones *orbatus* Sm.
Mesothorax not so strongly punctured 4.
4. Mesothorax with a dull sericeous surface; scutellum shining; area of metathorax very large; wings brownish *opacicollis* Ckll.
Mesothorax excessively densely punctured *granulithorax* Ckll.
(Very like *H. willsi* Ckll.; second cubital cell differently shaped.)
Not thus 5.
5. Larger, more robust; postscutellum large, almost angulate behind *instabilis* Ckll., var. b.
Smaller and otherwise *victoriellus* Ckll. and *imitans* Ckll.

Table 7. (Females; small or smallest species of Queensland.)

- Femora clear red; small species *eurhodopus* Ckll.
Femora dark, with little if any red 1.
1. Tibiae clear red; small species *cassiaefloris* Ckll.
Tibiae dark 2.
2. Abdomen without hair-bands or spots; mesothorax not closely and distinctly punctured 3.
Abdomen more or less hairy; mesothorax closely and distinctly punctured 4.
3. Mesothorax shining *sturti* Ckll.
Mesothorax dull, it and the scutellum very faintly greenish *blackburni* Ckll.
4. Hind margins of tergites black; broad basal bands of white tomentum *griseovittatus* Ckll.
Hind margins of tergites reddened; abdomen hoary, but no basal bands of tomentum *helichrysi* Ckll.

LIST OF SPECIES OF HALICTUS.

Those marked (M.) have at least some metallic (blue or green) colour.

Halictus alboguttatus Friese.

Central Australia. Judging from the description, this seems to be a synonym of *H. conspicuus* Sm. Length 8 mm., with white hair-spots at sides of tergites 2 to 4. It was collected by von Müller.

Halictus asperithorax Cockerell.

Melbourne (C. French); type in British Museum. Also at Sandringham, V. Female about 8 mm. long; black, dorsal hair dull pale ochreous. Related to *H. chapmani* Ckll.

Halictus barretti Cockerell.

Seaforth, V. (W. F. Hill). Allied to *H. macrops* Ckll. Female about 5.5 mm.; black, with very broad abdomen.

Halictus basilucens Cockerell.

Bribie Island (Hacker); type in Queensland Museum. Female hardly 5 mm. long; abdomen bright castaneous, the first tergite black, polished, except the broad apical margin. Differs from *H. cyclurus* by the distinct rugae of area of metathorax.

Halictus bassi Cockerell.

Mount Wellington, Tasmania (R. Turner). Type in British Museum. Male about 5.5 mm. long. A variation (var. a.) has only two cubital cells. Disc of mesothorax shining between punctures (dull in *H. blighi*). Keys

to separate this and other black Tasmanian *Halictus* are given in Ann. Mag. Nat. Hist., August, 1915, pp. 100, 101.

Halictus baudini Cockerell.

Mount Wellington, Tasmania (R. Turner). Type in British Museum. Male about 7 mm. long; black; larger than *H. repertus*, with a quite different area of metathorax.

Halictus behri Cockerell (M.)

Port Darwin, N.T. (Turner). Type in British Museum. Female, length 6.5 mm.; close to *H. flindersi*, but mesothorax brilliant blue, and there are differences in sculpture.

Halictus behri transvolans Cockerell (M.)

Mackay, Q. (Turner). Type in British Museum. Female with mesothorax peacock-green; abdomen shining dark green. Resembles *H. flindersi* in ventral scopa on abdomen, and the transverse lineolation in front of anterior ocellus, but with ferruginous (more or less infuscated) tibiae and tarsi.

Halictus bicingulatus Smith.

Melbourne, V., to Mackay, Q. Type in British Museum. Legs dusky red; bases of second and third tergites with broad bands of orange tomentum.

Halictus bicingulatus leai (Cockerell).

Victoria (French) to Brisbane, Q. Type in British Museum. Described as a distinct species, but better regarded as a variety or race of *bicingulatus*. The male is described in Proc. Acad. Nat. Sci. Philadelphia, 1913, p. 32. For a discussion of this group see Ann. Mag. Nat. Hist., May, 1914, p. 508. Female nearly 9 mm. long; scape black.

Halictus blackburni Cockerell.

Mackay, Q. (Turner). Type in British Museum. *H. crinitus* Friese is a synonym. Female about 6 mm. long; male much more slender. Superficially resembles *H. sturti*. The male has all the tarsi clear ferruginous; antennae only moderately long, dark.

Halictus blandulus Cockerell.

King George's Sound, W.A. Type in Australian Museum. Female nearly 6 mm. long, broad and robust; head and thorax black. Resembles *H. clarigaster* Ckll., but abdomen much broader and duller; known from *H. ewarti* Ckll. by the dull abdomen, colour of legs and sculpture of thorax. In the original description (Records Australian Museum, 1929) a line has been omitted.

Halictus blighi Cockerell.

Mount Wellington, Tasmania (Turner). Type in British Museum. Male about 6 mm. long; looks like *H. plebeius*, but antennae quite different (extremely long, black), dark clypeus, and dullish and sculptured scutellum.

Halictus boweni Cockerell.

Eaglehawk Neck, Tasmania (Turner). Type in British Museum. Male a little over 6 mm. long, very like *H. baudini*, but anterior and middle tibiae light red in front, abdomen much narrower, stigma darker, etc.

Halictus brazieri Cockerell.

Yallingup, W.A. (Turner). Type in British Museum. Female (not male, as given in original description) about 11 mm. long; resembling *Parasphecodes noachinus*, and connecting *Halictus* with *Parasphecodes*.

Halictus bremerensis Rayment (M.)

W. Australia. Female about 5 mm. long; resembles *H. demissus* Ckll. (Jn. Roy. Soc. W. Australia, xvii., p. 171).

Halictus brisbanensis Cockerell (M.)

Brisbane, Q. (Hacker). Female about 5 mm. long; head and thorax black, with the mesothorax dull blue-green; abdomen shining chestnut-red, hind margins of first three tergites with broad black bands, not reaching extreme sides; stigma large and dark; legs largely red. Varies to forms with much darker abdomen, and the mesothorax may be yellowish green. Allied to *H. sphaecodoides* Sm.

Halictus burkei Cockerell.

Hobart, Tasmania (J. J. Walker). Type in British Museum. Female about 5 mm. long; black, with the abdomen rufo-piceous; mesothorax very shiny; tegulae pale testaceous, with a dark mark in front; stigma very large, dull reddish-brown. The abdomen beneath has much white hair, used for collecting pollen.

Halictus bursariae Cockerell.

Brisbane, Q. (Hacker); also Caloundra and Queensland National Park. Male about 6 mm. long, shining black; antennae long, entirely dark. Belongs to a group which includes *H. cambagei*, *H. repertus*, *H. isthmalis* and *H. repertulus*. The dark tibiae distinguish it from *H. isthmalis*; the black tegulae from *H. repertulus*.

Halictus callaspis Cockerell (M.)

Bribie Island, Q. (Hacker). Female about 6.5 mm. long; mesothorax yellowish green, much brighter than head; scutellum peacock-green; abdomen shining olive-green. The amber-coloured stigma and very finely lineolate area of metathorax distinguish it from *H. flindersi*, *H. caloundrensis*, etc.

Halictus caloundrensis Cockerell (M.)

Caloundra, Q. (Hacker); also Bribie Island. Female 6 mm. long; of the group of *H. behri*, *transvolens* and *flindersi*, but easily separated by the mesothorax, which is very brilliant yellowish green, with transverse wave-like plicae, directed obliquely, so as to meet at an angle in middle line. Abdomen shining steel-blue, the venter with a curled white scopa. The form *leucurus*, described as a subspecies of *H. flindersi*, is nearer to *H. caloundrensis*.

Halictus cambagei Cockerell.

Adelaide, S.A. (Behr). Type in Berlin Museum. The male has the head very broad; sculpture of metathoracic area extremely fine (the area has evident ridges in *H. repertus* and *H. isthmalis*). Length about 5.5 mm.

Halictus cassiaefloris Cockerell.

Mackay, Q. (Turner). *H. tenuis* Friese is a synonym. Female about 5 mm. long; black, with dull white hair, not forming bands or spots on abdomen; mandibles clear red; scape clear red, the apical half above black or nearly; knees, tibiae and tarsi clear ferruginous. Allied to *H. eurhodopus*.

Halictus chapmani Cockerell.

Western Australia (Preiss). Type in Berlin Museum. Female about 7 mm. long. Very close to *H. repraesentans* Sm., but smaller. Abdomen shining, hind margins of tergites broadly very dark reddish; mesothorax shining. Rayment records it from Denmark, W.A., and notes that it is superficially similar to *H. victoriellus* Ckll.

Halictus circumdatus Cockerell.

Rutherglen, V. (French). Female about 8.5 mm. long; black, shining, with thin greyish-white hair; mesothorax shining, strongly, but not very densely punctured; basal area of metathorax concave, shining, strongly longitudinally plicate, sharp-edged, with the apical marginal area smooth and shining, depressed in middle; abdomen pure black, with clear white tomentum at bases of second to fourth tergites. Resembles *H. repraesentans*, but easily known from this and *H. seductus* by the area of metathorax.

Halictus clarigaster Cockerell.

Caloundra, Q. (Hacker). Female about 6.5 mm. long; head and thorax black; abdomen clear bright ferruginous, slightly dusky apically; labrum and mandibles dark red; tegulae light ferruginous; legs black, with all the knees, anterior tibiae in front, and the other tibiae on inner side, ferruginous. General aspect like *H. ewarti* Ckll.

Halictus clariventris Friese.

Adelaide, S.A. Female very like *H. granulithorax* Ckll., but considerably smaller, without the strong median sulcus on anterior part of mesothorax, while the first tergite is considerably more shining, and the scutellum is entirely dull except the anterior margin. The male resembles *H. victoriellus* Ckll., having a broad abdomen, like a female; the tegument of clypeus is all black.

Halictus clelandi Cockerell.

Adelaide, S.A. (Schomburgk). Type in Berlin Museum. Male about 6 mm. long; head and thorax black, abdomen and legs dark reddish brown; lower part of clypeus cream-colour, the actual margin ferruginous; mandibles ferruginous, dark at base; flagellum long, dark coffee-brown beneath.

Halictus cognatus Smith.

Launceston, Tasmania. Male with disc of thorax aeneous; flagellum fulvous beneath. Probably male of *H. globosus* Smith.

Halictus confusellus Cockerell.

Launceston, Tasmania (Littler). Female about 7 mm. long; separated from *H. imitans* by the ferruginous stigma and shorter area of metathorax; from *H. pulvitectus* by hind margins of tergites black.

Halictus conspicuus Smith.

"Australia." Female with tibiae and tarsi clear red; abdomen without bands, but with conspicuous patches of ochry-tinged white tomentum at lateral bases of tergites 2 to 4; tegulae fulvous; postscutellum transversely striate.

Halictus convexus Smith.

Victoria. Female smaller and less hairy than *H. lanarius* Sm.

Halictus cyclognathus Cockerell.

Croydon, V. (S. W. Fulton). Eaglehawk Neck, Tasmania. Male not quite 4.5 mm. long; black, with scanty greyish-white hair; head very large and broad; cheeks broad and flattened, angled behind; mandibles long, strongly curved, cream-colour, red apically; clypeus with an apical pale band; abdomen short for a male, shining black. By the form of the head recalls *H. purnongensis*.

Halictus cyclurus Cockerell.

Mount Tambourine, Q. (Hacker). Female about 5.5 mm. long; head .

and thorax black; abdomen very broad and short, rather dark chestnut-red, the first tergite black except a marginal band; second with a transverse blackish band; fourth and following tergites fuscous. Allied to *H. hedleyi*.

Halictus dampieri Cockerell (M.)

Mackay, Q. (Turner). Type in British Museum. It extends from Brisbane to Cairns. *H. strangulatus* and *H. indigoteus* of Friese are synonyms; the latter the form with bluish-green mesothorax. The male is described in Trans. Amer. Ent. Soc., August, 1910, p. 228.

Halictus darwiniellus Cockerell.

Sydney, N.S.W. (Charles Darwin). Type in Hope Museum, Oxford. Belongs to subgenus *Evyllaesus*. Black; flagellum ferruginous beneath except basally; upper part of clypeus with a shining median groove; anterior wing 6.6 mm. long; second and third tergites with basal bands of white tomentum, failing in middle; fourth with a broad entire speckled band.

Halictus davidis Cockerell.

Kuranda, Q. (Turner). Type in British Museum *H. nigroscopaceus* Friese is a synonym. Female about 10 mm. long; abdomen shining black, without hair-bands or patches; resembles *Parasphcodes carbonarius* (Sm.), but less strongly punctured. Male about 8.5 mm. long; greater part of clypeus light yellow; flagellum very long. Pleura striated in both sexes.

Halictus demissus Cockerell (M.).

Launceston, Tasmania (Littler). Female nearly 5.5 mm. long; mesothorax shining green, polished; hind spur with four obtuse spines. Near *H. humilis*, but with dark legs and striate area of metathorax. Rayment (1930) has described the male, from Victoria.

Halictus disclusus Cockerell.

Eaglehawk Neck, Tasmania (R. E. Turner). Type in British Museum. Male about 6 mm. long, black, with the first three tergites bright chestnut red, but the first dark basally and with large dusky median cloud, second and third with a dark spot at each laterobasal corner; tegulae black. Resembles *H. tasmaniae* (Ckll.), but distinguished by the dull mesothorax.

Halictus doddi Cockerell.

Kuranda, Q. (Dodds). Female about 8 mm. long; rather slender, black, the first two tergites light ferruginous, with a large transverse black dorsal patch. This has a dorsal patch of dense tomentum in the manner of *H. leichardti*, from which it is easily known by the colour of abdomen. It approaches *Parasphcodes*, especially *P. basilautus* Ckll.

Halictus dolichocerus Cockerell.

Yarrowin, N.S.W. (Froggatt). Also at Brewarrina. Male 5 to 6 mm. long; antennae extremely long, dark; legs bright ferruginous, femora largely black, tibiae marked with black. The shining mesothorax at once separates it from *H. haematopus*.

Halictus dorsicyaneus Cockerell (M.).

Launceston, Tasmania (Littler). Female about 5 mm. long; mesothorax small, dark blue, shining, but not polished; scutellum blue, with two polished shining spaces; metathorax black; abdomen shining black. Differs from *H. kesteveni* Ckll. by the black (instead of blue) metathorax. Compared with *H. inclinans* Sm., it is less robust, with darker tegulae and different abdomen.

Halictus dotatus Cockerell (M.).

Sydney, N.S.W. (Froggatt). Also Tooloom. Female about 5.5 mm. long; head and thorax green, abdomen and legs bright ferruginous. Allied to *H. vitripennis*, but scape red and base of abdomen not black.

Halictus doweri Rayment (M.).

Mentioned in discussion of *H. occidentalis*. "May be near *vitripennis*."

Halictus eboracensis Cockerell.

Ebor, N.S.W. (A. J. Turner). Also at Barrington Tops. Black; the bases of tergites 3 and 4 with very broad bands of pale greyish tomentum, and base of second with a cuneiform patch of the same on each side. Allied to *H. seductus* Ckll., but mesothorax not dull anteriorly, and plications at base of metathorax not so fine. Male unknown.

Halictus elliotii Rayment.

E. Gippsland. Female 8.5 mm. long; allied to *H. lanarius* Sm. It appears blacker, being less hairy. Rayment figures the spurs. (Victorian Naturalist, October, 1929.)

Halictus erythrurus Cockerell (M.).

Croydon, V. (S. W. Fulton). Also Launceston, T.; York, W.A.; Brisbane, Q. Known from the similar *H. taritoni* Ckll. and *H. raymenti* Ckll. by the highly polished clypeus. Rayment discusses the variation in Jour. Roy. Soc. W. Australia, xvii., p. 169. The female is a little less than 5 mm. long. The var. a. is rather smaller; mesothorax more shining, dark bluish green.

Halictus erythrurus atrocyaneus Cockerell (M.).

Brisbane, Q. (Hacker). Female about 4 mm. long; mesothorax very dark blue, thorax otherwise black; abdomen chestnut red, the first tergite black, except apically; mandibles red.

Halictus erythrurus maiusculus Rayment (M.).

Perth, W.A. Larger. Length, 5 to 6 mm.

Halictus etheridgei Cockerell.

Yallingup, W.A. (Turner). Type in British Museum. Female 9.5 mm. long; black, very robust; clypeus with a deep median sulcus; head extremely broad; wings dusky; no hair-bands or patches on abdomen.

Halictus eurhodopus Cockerell.

Kuranda, Q. (Turner). Female about 5 mm. long; rather slender, black, with the legs, except the coxae, bright clear ferruginous; abdomen with a narrow red apical plate, the venter with a curled white scopa. Allied to *H. cassiaefloris*, but distinguished by the red femora.

Halictus euryurus Cockerell.

Adaminaby, N.S.W. (A. J. Turner). Type in Queensland Museum. Male nearly 6 mm. long; black, the abdomen broad-oval, the hind margins of the tergites beyond the first stramineous; tegument of clypeus entirely black. The metathorax (area with sharp straight plicae, only two or three in middle wrinkled) and antennae separate it at once from *H. macrops*. The mesothorax is much more coarsely punctured than in *H. clariventris* Friese.

Halictus evasus Cockerell.

Coolangatta, Q. (A. J. Turner). Type in Queensland Museum. Female 7 mm. long; black, head and thorax with rather long white hair, quite dense on cheeks and postscutellum; mesothorax dull, very coarsely punc-

tured; abdomen broad, shining. Very near to *H. confusellus* Ckll., but easily separated by the more robust dull, coarsely sculptured mesothorax, and the shining area of metathorax.

Halictus ewarti Cockerell.

Kuranda, Q. (Turner). Type in British Museum. Female nearly 7 mm. long; abdomen entirely bright chestnut red. It looks like a *Sphcodes*.

Halictus exceptus Cockerell.

Tooloom, N.S.W. (Hacker). Female about 7 mm. long; robust, black, including antennae; pubescence very scanty and short; mesothorax shining; abdomen shining black, with small white hair patches at sides of second and third tergites. Allied to *H. seminitens* Ckll., but easily distinguished by the rather pale reddish brown tarsi.

Halictus excusus Cockerell.

Pyengana, Tasmania (Littler). Male about 7.5 mm. long; slender, black, with a large triangular cream-coloured mark on clypeus (but labrum and mandibles black); antennae very long, flagellum moniliform, entirely black; abdomen densely and rather coarsely punctured. Separated from *H. lanariellus* Ckll., by the entirely dull mesothorax.

Halictus expansifrons Cockerell.

New South Wales. Male about 6 mm. long; black, robust (like a female); head broad; mandibles dark; clypeus with a transverse pale yellow band; antennae rather long, flagellum obscure reddish beneath; mesothorax shining, strongly punctured, sparsely in middle; tarsi cream-colour, becoming pale ferruginous apically. Closely allied to *H. clelandi* Ckll.

Halictus eyrei Cockerell (M.).

Mackay, Q. (Turner). Type in British Museum. Also at Brisbane and Caloundra. *H. claripes* Friese is a synonym. Female a little over 5 mm. long; abdomen entirely bright red.

Halictus eyrei darwiniensis Cockerell (M.).

Port Darwin, N.T. (Hill). Female with abdomen very dark brown, almost black, often with the base more or less red.

Halictus flindersi Cockerell (M.).

Mackay, Q. (Turner). Type in British Museum. Female about 6 mm. long; head, thorax and abdomen shining purple-blue, the upper part of clypeus and anterior part of mesothorax peacock-green. Male scarcely over 5 mm.; abdomen darker, little metallic. The female var. a. has mesothorax and scutellum entirely Prussian-green.

Halictus flindersi leucurus Cockerell (M.).

Bribie I., Q. (Hacker). This is better regarded as a variety of *H. caloundrensis* Ckll.; it has the hair at apex of abdomen entirely brownish white (dark fuscous in *H. flindersi*). See Ann. Mag. Nat. Hist., July, 1915, p. 7.

Halictus flindersi thor Cockerell (M.).

Thursday Island (Cockerell). Clypeus and supra-clypeal area more or less coppery red, mesothorax and scutellum shining yellowish green; abdomen shining dark blue-green, the depressed portions of tergites more steel-blue; a large curled ventral scopa.

Halictus floralis Smith (M.).

H. vividus Smith the same. Female with abdomen green; mesothorax very bright green, but surface dull.

Halictus formosus Rayment (M.).

Albany, W.A. Female about 6 mm. long; allied to *H. callaspis* Ckll., and superficially resembles *H. demissus* Ckll.

Halictus forresti Cockerell.

Mackay, Q. (Turner). Type in British Museum. This is *H. scutellatus* Friese, male, but not female. The abdomen is very dark reddish, and the insect approaches *Parasphecodes*. Male about 6 mm. long; flagellum extremely long, black; mesothorax dullish; upper edge of prothorax, tubercles and postscutellum with white tomentum. In the original type the abdomen was entirely black; it seems to vary in colour.

Halictus forticornis Cockerell.

Kalamunda, W.A. (R. E. Turner). Type in British Museum. Male about 4 mm. long; very close to *H. cyclognathus*, but head smaller, antennae longer, and area of metathorax different. The flagellum is light orange-ferruginous beneath.

Halictus franki Friese.

Fremantle, W.A. Looks like *Parasphecodes plorator* Ckll., but area of metathorax quite different. Abdomen shining, broad and short, very finely and closely punctured, without hair-bands or spots; hind spur with short noduliform teeth. Wings distinctly dusky, with dark stigma; mesothorax excessively densely punctured all over.

Halictus jurneauzi Cockerell.

Eaglehawk Neck, Tasmania (Turner). Type in British Museum. Female about 7 mm. long; superficially like *H. sturti*, but easily separated by the less shining mesothorax and more delicately sculptured area of metathorax.

Halictus gilesi Cockerell.

Victoria. Type in British Museum. Female about 8 mm. long, resembling *H. repraesentans*, but mesothorax much more coarsely sculptured. For microscopic characters, see Entomologist, 1905, p. 302.

Halictus glauerti Rayment (M.).

Perth, W.A. Female about 5 mm. long; very close to *H. vitripennis* Sm. (Jr. Roy. Soc. W. Australia, xvii., p. 170).

Halictus globosus Smith.

Tasmania. Female with mesothorax appearing black (Smith says with a brassy tinge); abdomen dark brown, tergites 3 to 5 pilose; outer intercubital and recurrent nervures almost obsolete.

Halictus granulithorax Cockerell.

Victoria (C. French). Female about 6.5 mm. long; black, robust, hind margins of tergites suffusedly reddish; tegulae fulvous. Very like *H. willsi* Ckll., but differs in venation and sculpture. It was taken by J. A. Kershaw at Pt. Lonsdale.

Halictus greavesi Rayment (M.).

Western Australia. Female 4.5 mm. long. Name misprinted *greavessi*. Abdomen and legs largely red; allied to *H. raymenti* Ckll.

Halictus griseovittatus Cockerell.

Brisbane, Q. (Hacker). *H. mjobergi* Friese, from Mt. Tambourine, is a synonym. Female about 7.5 mm. long; black, robust, with dull white hair; clypeus and supraclypeal area brilliantly shining, with large punctures; mesothorax shining, but strongly and quite closely punctured; bases of tergites with pale greyish tomentum. Looks rather like a small *H. repraesentans*, but metathorax quite different.

Halictus hackeriellus Cockerell (M.).

Brisbane, Q. (Hacker). Male about 5 mm. long; resembling *H. kesteni*, but head yellowish green; mesothorax and scutellum dull brassy, but the shining scutellum contrasting with the bluish green postscutellum and metathorax. Known from male *H. dampieri* by the smaller size, much shorter antennae, and absence of a yellow band on clypeus.

Halictus haematopus Cockerell.

Launceston, Tasmania (Littler). Male about 6 mm. long; resembles *H. sanguinipes* Ckll. and *H. bicingulatus* Sm. Flagellum wholly black; tegulae light orange-ferruginous; tibiae, tarsi and apical part of femora bright ferruginous; clypeus with a broad pale yellow band.

Halictus haematostoma Cockerell (M.).

Windsor, V. (French). Male about 4.75 mm. long; robust, with dull white hair; head and thorax black, with mesothorax and scutellum shining dark bluish green; flagellum bright apricot colour; labrum, mandibles (except base) and lower margin of clypeus bright ferruginous; wings clear; abdomen piceous, with hind margins of tergites pallid. Although a male, this has the build of a female, with robust body and short antennae. Related to *H. inclinans* Smith.

Halictus hedleyi Cockerell.

Port Philip, V. (Coulon). Type in Berlin Museum. Also at Cheltenham. Male about 5.5 mm. long; second and third tergites, and much of fourth, red; tegulae clear light reddish-testaceous; apex of abdomen with a broad plate as in *Sphecodes* subgenus *Proteraner*. The var. a. has the second abdominal tergite red, with a very broad dusky apical shade; the third red only at sides of base, fourth black.

Halictus helichrysi Cockerell.

Mt. Tambourine, Q. (Hacker). Also Brisbane and Bribie I. Female about 7 mm. long; black, the broad abdomen thinly hairy at sides and dorsally beyond middle, but not banded. Known from *H. victoriellus* and *H. plebeius* by the mesothorax strongly punctured, and hind margin of fourth tergite broadly whitish hyaline; from *H. imitans* by the flagellum red beneath.

Halictus hemichalceus Cockerell (M.).

Brisbane, Q. (Hacker). Type in Queensland Museum. Female about 5.5 mm. long; mesothorax and scutellum dark brassy green; abdomen dull ferruginous. A key separating this from others having mainly or wholly red abdomen is given in Ann. Mag. Nat. Hist., August, 1932, p. 240.

Halictus hilli Cockerell.

Port Darwin, N.T. (Hill). Male with head and thorax steel blue, scutellum with the polished disc olive green; head broad, eyes very strongly converging below; abdomen steel-blue, broadly reddened at bases of third and fourth tergites. Related to *H. caloundrensis* Ckll., but with lighter stigma and different coloration. There are transverse striae before the middle ocellus.

Halictus holochlorus Cockerell (M.).

Cheltenham, V. (French). Female a little over 6 mm. long; green, with dull white hair; known from *H. urbanus* by the light reddish stigma and green abdomen. It is larger than *H. floralis*. The legs are black or piceous, knees and small joints of tarsi more or less ferruginous; tegulae ferruginous.

Halictus humei Cockerell.

"Australia." Female about 5.5 mm. long; black, with greyish-white pubescence; flagellum brownish beneath; lateral bases of tergites 2 to 4 broadly covered with whitish tomentum. For microscopical character see *Entomologist*, 1905, p. 302. It nearly agrees with the brief description of *H. familiaris* (Erichs.).

Halictus humiliformis Cockerell (M.).

Ebor, N.S.W. (A. J. Turner). Female resembling *H. limatiformis*, but mesothorax shining blue, with a polished surface. Differs from *H. humilis* by the black legs, with anterior knees red, and the entirely black antennae. The hind spur is not pectinate.

Halictus humilis Smith (M.).

Champion Bay, W.A. Female with mesothorax small and shining, dark green; abdomen shining black. See also *Trans. Amer. Ent. Soc.*, August, 1910, p. 228.

Halictus idoneus Cockerell.

Brisbane, Q. (Hacker). Male about 7 mm. long; slender, black, with white hair; lower half of clypeus cream-colour, depressed in middle; flagellum long, entirely dark, very strongly crenulated beneath; legs black, with the tarsi, and extreme apices of tibiae, clear ferruginous. Known from *H. blackburni* by the rough mesothorax, the dense punctures visible under a lens.

Halictus imitans Cockerell.

Victoria (C. French). Type in British Museum. Also Georgetown, Tasmania. Female about 6.5 mm. long; black, robust; antennae entirely dark, the flagellum faintly brownish beneath; lateral bases of second and following tergites with rather inconspicuous patches of dull white tomentum; wings dusky.

Halictus inclinans Smith (M.).

Victoria and W. Australia. Female larger than *H. limatus* Sm.; mesothorax greener, dull; abdomen dark brown, with a sericeous surface. The type is from Champion Bay.

Halictus instabilis Cockerell.

Croydon, V. (Miss A. M. Fulton). Female about 8 mm. long; black, resembling *H. griseovittatus*, but larger, and the bands on abdomen slightly ochreous. The hind spur of hind tibiae in this and *griseovittatus* is of the same type, with a single stout oblique tooth a little before the middle, and beyond this a very long low lamina or keel. The variety a., with slightly reddish wings, and stigma clearer red, is from Windsor, V. Variety b., with longer postscutellum, subangulate behind; area of metathorax sharply defined, with stronger plicae; second cubital cell broad; is from Victoria.

Halictus isthmatis Cockerell.

Eaglehawk Neck, Tasmania (Turner). Type in British Museum. The male has the antennae long, black; a large broadly rounded red plate at end of abdomen. Length about 5 mm. The var. a. is smaller, with area of metathorax more finely sculptured, tegulae with a large red spot. It comes from Mt. Wellington. Smaller than *H. repertus*, with ridges of metathoracic area not limited to basal part, and tibiae red, as well as the tarsi. The female (about 6 mm. long) is described in *Ann. Mag. Nat. Hist.*, August, 1915, p. 97.

Halictus kesteveni Cockerell (M.).

Kuranda, Q. (Turner). Type in British Museum. Goes north to Cape York. Male 4 to 4.5 mm. long; head and thorax dark green; metathorax blue; abdomen shining black, without bands; labrum and margin of clypeus dark. Resembles *H. saycei*.

Halictus kurandensis Cockerell.

Kuranda, Q. (Turner). Male about 6.5 mm. long; rather robust, black, with dull white hair; apical half of clypeus (narrowing laterally, not reaching sides) bright lemon yellow, but the actual margin light ferruginous; flagellum very long (about 4 mm.), strongly crenulate beneath; abdomen shining, without hair-hands. Resembles *H. circumdatus* by the striated pleura, and *H. tertius* by the glaucous mesothorax.

Halictus lanariellus Cockerell.

Yarrowin, N.S.W. (Froggatt). Also Kewell and Middle Harbour. Described from the female, but the male is described in Records Australian Museum, xvii, p. 229. Female about 8 mm. long. For characters see key.

Halictus lanarius Smith.

Widely distributed, from Devonport, Tasmania to Brisbane and Mt. Tambourine, Q., and as far as Halifax. Also at Adelaide, S.A. *H. lanuginosus* Smith is the same species. The male type (*lanuginosus*) has the clypeus with a yellowish white band; face with much white hair; whole insect very hairy. This may have to be called *H. infimus* (Erichson). Erichson's species, described (1841) under *Andrena*, cannot be precisely recognised from the description. See Trans. Amer. Ent. Soc., August, 1910, p. 236.

Halictus leichardti Cockerell.

Mackay, Q. (Turner). Type in British Museum. Also Kuranda and Dunk I. *H. paracolletinus* Cockerell and *H. scutellatus* Friese are synonyms. Wings with a strong fuscous tint. For diagnostic characters, see table. For male, see Ann. Mag. Nat. Hist., April, 1912, p. 387.

Halictus leucorhinus Cockerell.

Sandringham, V. (Rayment). Male about 10 mm. long; apical half of clypeus white, except the black margin; legs black. Resembles *H. eboracensis*, but wings darker, with darker and stronger veins.

Halictus limatiformis Cockerell (M.).

National Park, Q. (Hacker). Female about 5 mm. long; very close to *H. limatus*, but area of metathorax granular and dull, feebly plicate, with a shining margin; tegulae dark castaneous.

Halictus limatiformis scrupulosus Cockerell (M.).

Nanango District, Q. (Hacker). First tergite, and sometimes much of base of second, clear red.

Halictus limatus Smith (M.).

Tasmania. Female smaller than *H. inclinans* Sm.; mesothorax bluer, dull; abdomen shining black.

Halictus littleri Cockerell.

Launceston, Tasmania (Littler). Female about 8.5 mm. long; close to *H. circumdatus* Ckll., but clypeus rough, more closely punctured; vertex and mesothorax with conspicuous black hair; tegulae much darker. The second tergite is finely punctured, except the broad apical part, which is minutely lineolate, with only scattered rudimentary punctures.

Halictus luctificus Cockerell (M.).

Launceston, Tasmania (Littler). Female about 5.4 mm. long; head black; mesothorax dull, very dark green, scutellum dark blue, with two polished areas; abdomen shining black. Allied to *H. mundulus* Ckll., but distinguished by the shining margin of metathoracic area. Also allied to *H. dorsicyaneus* Ckll.

Halictus luteoaneus Friese (M.).

Victoria (von Müller). About as large as *H. flindersi* Ckll.; head and thorax golden green, with coppery tints on clypeus and posterior part of mesothorax; basal half of scape clear red; tegulae clear rufous; wings clear, with dark brown stigma; legs, except base, clear ferruginous, hind femora broad basally and bent in middle; abdomen shining green, curled ventral scopa large.

Halictus macrops Cockerell.

Launceston, Tasmania (Littler). Male about 5 mm. long; black, robust, looking like a female; head very large and broad; antennae entirely dark and not very long. Known from *H. niveifrons* by the broad face.

Halictus maitlandi Cockerell.

Kuranda, Q. (Turner). Type in British Museum. Female about 7 mm. long, superficially similar to *H. stirlingi*, but structurally very different. Black; head, thorax and abdomen dullish, with a sericeous lustre; tegulae ferruginous; tibiae and tarsi rather dark chestnut red; hind tibiae and tarsi with much black hair.

Halictus mediopolitus Cockerell.

Purnong, V. (S. W. Fulton). Also Murray R., S.A. Female about 6.5 mm. long; black, with very pale ochreous-tinted or creamy hair; mesothorax and scutellum bare, highly polished; wings clear, the dusky rufous stigma very long; abdomen with dense conspicuous hair-bands at bases of tergites 2 to 4.

Halictus megastigmus Cockerell (M.).

Hobart, Tasmania (C. E. Cole). Type in Victoria Museum. Female about 7 mm. long; mesothorax shining green. Recognisable by the shining mesothorax and large stigma, which is red with broad dusky margins.

Halictus melanopterus Cockerell.

Yallingup, W.A. (R. E. Turner). Type in British Museum. Female nearly 10 mm. long. Very near *H. instabilis* Ckll., but larger, with darker wings and darker stigma, and the abdominal bands not entire. The abdomen is much like that of *H. circumdatus* Ckll., but the metathorax is quite different.

Halictus melanurus Cockerell.

York, W.A. (O. H. Sargent). Type in U.S. National Museum. Female about 4 mm. long; black, with abdomen about as far as middle of third tergite shining yellowish-ferruginous; legs dusky red, anterior tibiae in front and all the knees clear red; hind spur without teeth, only minutely serrulate or spinulose. Allied to *H. disclusus*, but easily separated by the red tegulae.

Halictus mesembryanthemi Cockerell.

Sandringham, V. (Rayment), and north to Brisbane. Female about 6 mm. long; male about 5.6. For characters, see key. The abdomen is red-banded; the male suggests *H. repertus*, but has the flagellum light ferruginous beneath (entirely black in *H. repertus*).

Halictus mesocyaneus Cockerell (M.).

Bribie I., Q. (Hacker). Female about 5 mm. long; smaller than *H. inclinans*, and easily separated by the polished abdomen and black scutellum. The mesothorax is deep blue, somewhat shining, but not polished, but the thorax otherwise is black, and the head is black.

Halictus micridoneus Cockerell.

Brisbane, Q. (Hacker). Male about 4.5 mm. long; shining black, with rather short abdomen; head large and rather broad; antennae short, like those of a female. *H. idoneus* Ckll., is much larger. *H. cyclognathus* Ckll. is also allied, but *H. micridoneus* has the face much narrower. The first recurrent nervure joins third cubital cell some distance from base.

Halictus microchaleus Cockerell.

Thirroul, N.S.W. (Cockerell). Male slightly over 3 mm. long; head and thorax yellowish green, area of metathorax blue-green; abdomen greenish-black. Tibiae pale red at both ends, tarsi reddish. Differs from *H. hackeriellus* Ckll. by the much narrower head and colour of legs.

Halictus mirandus Cockerell.

Yallingup, W.A. (Turner). Type in British Museum. Female 10 to 10.5 mm. long; black, with femora (anterior ones only apically), tibiae and tarsi bright chestnut red; front and mesothorax obscurely aeneous or greenish; first tergite with a prominent keel-like tubercle (lacking in the allied *H. conspicuus* Sm.). The abdomen has patches of snow-white tomentum.

Halictus mitchelli Cockerell.

Hobart, Tasmania (J. J. Walker). Type in British Museum. Female nearly 9 mm. long; black, very like *H. warburtoni* Ckll., but not its female, as the wings are quite different, the stigma smaller and yellow (a sort of dull amber), nervures lighter, etc. For microscopical characters, see Entomologist, 1906, p. 56.

Halictus moreensis Cockerell.

Moree, N.S.W. (A. P. Dodd). Type in Queensland Museum. Female about 8 mm. long; black, with very broad abdomen (its width over 3 mm.); tibiae and tarsi entirely clear bright ferruginous; tegulae ferruginous; extreme apex of abdomen with red hair. Allied to *H. conspicuus* Sm., but with bands instead of spots on the abdomen.

Halictus mundulus Cockerell (M.).

Kalamunda, W.A. (R. E. Turner). Type in British Museum. Female about 5 mm. long; mesothorax and scutellum dark bluish green; flagellum clear ferruginous beneath; tegulae amber colour. Allied to *H. urbanus*, but mesothorax quite differently coloured.

Halictus murrayi Cockerell (M.).

Adelaide R., N.T. (J. J. Walker). Type in British Museum. Also occurs in Queensland. Thorax usually purple-blue, varying to blue-green; tegulae rufous; legs black; abdomen shining black; area of metathorax more or less distinctly plicatulate. Close to *H. urbanus* Sm.

Halictus musicus Cockerell.

Mt. Tambourine, Q. (Hacker). Also Tooloom, N.S.W. *H. trimaculatus* Friese is a synonym. Female about 10 mm. long; black, the abdomen with a faint green tint, especially on the first two tergites; postscutellum with a patch of orange tomentum; legs black, with coarse black hair; wings dilute fuscous.

Halictus nigropolitus Cockerell.

Port Darwin, N.T. (Cockerell). Female nearly 6 mm. long, robust, with very broad abdomen; pure black, including legs; mandibles red in middle. Mesothorax highly polished. Near *H. sturti* Ckll., but with different sculpture of mesothorax, and also less robust. Also near *H. semipolitus* Ckll., but much larger and more robust.

Halictus niveifrons Cockerell.

Tasmania (Lea). Also Sandringham, V. Male about 4.75 mm. long; black, with white hair, copious and snow-white on face and front; mandibles bright red at apex; clypeus with tegument entirely black; antennae wholly dark; tegulae clear testaceous; wings clear. The abdomen is broad, black, and shining.

Halictus niveorufus Friese.

Ararat, V. Female 10-11 mm. long, like *H. gibbosus* Fr. (which is a *Parasphecodes*), but abdomen clear red, first tergite without a prominence; legs black; wings dusky. Doubless a *Parasphecodes*.

Halictus oblitus Smith.

Swan River, W.A. Female with stigma black, or practically so; area of metathorax very finely and minutely wrinkled; abdomen with hair-patches.

Halictus occidentalis Rayment (M.).

Perth, W.A. Female 5.5 mm. long; allied to *H. tarltoni* Ckll., *H. raymenti* Ckll., and *H. doweri* Raym. Legs clear ferruginous; abdomen chestnut red. The specific name is preoccupied.

Halictus olivinus Cockerell (M.).

Brisbane, Q. (Hacker). Male about 5 mm. long; slender, head and thorax shining dark olive green, the metathorax steel blue; flagellum long and slender, ferruginous beneath; wings hyaline, faintly dusky; abdomen dark brown, polished. Known from *H. hackeriellus* by the red tibiae.

Halictus opacicollis Cockerell.

Victoria (C. French). Female about 7 mm. long; black, with scanty dull white hair; flagellum very obscurely brownish beneath; hind spur of hind tibia with a large blunt tooth near the middle, and beyond that a long low keel. The mesothorax is less strongly punctured than in *H. orbatus*. Also taken at Hobart, Tasmania, by Lea.

Halictus orbatus Smith.

Widely distributed, from Tasmania to Brisbane. See characters in table. Near to *H. convexus* Sm.; see Ann. Mag. Nat. Hist., May, 1914, p. 511.

Halictus oxleyi Cockerell.

Adelaide, S.A. Type in British Museum. Male about or nearly 7 mm. long; black, with the pubescence yellowish, especially on face, where it is abundant; mandibles rufous, lighter and almost yellow in the middle; flagellum light ferruginous, above and below; nervures and stigma amber-colour.

Halictus oxoniellus Cockerell (M.).

Bribie I., Q. (Hacker). Female about 5 mm. long; head and thorax black, except the mesothorax and scutellum, which are a fine dark blue; abdomen bright ferruginous, the first tergite black, except a broad apical band, the others with black patches on extreme lateral margins; legs black, hind spur with three large teeth. Known from *H. erythrusus* by the dark stigma and blue mesothorax.

Halictus pachycephalus Cockerell.

Yarrowin, N.S.W. (W. W. Froggatt). Male about 6 mm. long, with very large broad head; legs mainly ferruginous; stigma red. Related to *H. spenceri*, but easily separated by the colour of the legs.

Halictus pavonellus Cockerell (M.).

Bribie I., Q. (Hacker). Female about 4.25 mm. long; mesothorax and scutellum dull, rich deep blue, rest of thorax very obscure blue-green; abdomen with a strong tinge of blue-green or bluish. Differs from *H. floralis* by the dark rufopiceous stigma (pale testaceous in *floralis*); the apically abbreviated stigma and blue mesothorax distinguish it from *H. dampieri*.

Halictus peraustralis Cockerell.

South Australia to Brisbane. Type in British Museum. Resembles a small Eumenid wasp. For characters, see keys.

Halictus picticornis Cockerell.

Caloundra, Q. (Hacker). Black, male about 4.5 mm. long, female 5.5 mm. Male flagellum bright ferruginous beneath, with the last three joints black; tubercles clear ferruginous. Female very near *H. plebeius* Ckll., but smaller, with yellowish and fuscous hair on hind legs. Type in Queensland Museum.

Halictus platycephalus Rayment.

Victoria. Female. Length about 4.5 mm.; black, with large broad head; mesothorax shining; wings almost clear, stigma dark ferruginous; tibiae light at end; tarsi ferruginous; hind spurs with one tooth and three nodules. Belongs to subgenus *Evylaeus*.

Halictus plebeius Cockerell.

Purnong, V. (S. W. Fulton). Female about 6.5 mm. long, like *H. imitans*, but mesothorax and scutellum much more shining, with fine punctures; flagellum dull red beneath; stigma smaller; hind spur of hind tibiae yellowish white (red in *imitans*). Male a little over 5 mm. long; clypeus with a broad ivory-coloured band on apical half; flagellum long and rather thick, obscurely brownish beneath; legs black, with very slender reddish-brown tarsi; abdomen shining, not hairy.

Halictus pulvitectus Cockerell.

Eaglehawk Neck, Tasmania (Turner). Type in British Museum. It was also reported from Sandringham, V., but this was really *H. victoriellus* Ckll. Female 6.5 to 7 mm. long; black, with hind margins of tergites testaceous. Male about 6 mm. long; clypeus with an apical cream-coloured band; flagellum long, very slightly brownish beneath; tegulae ferruginous. *H. victoriellus* is smaller, with a much more finely punctured mesothorax.

Halictus punctatus Smith (M.).

Mesothorax green, with very large shallow punctures; abdomen very shiny, red at sides. Female. The name is preoccupied, and I have suggested that the species may be called *H. exlautus* (Ckll.), based on *H. punctatus exlautus* Ckll. For characters and localities, see Ann. Mag. Nat. Hist., April, 1912.

Halictus punctatus exlautus Cockerell (M.).

Abdomen entirely orange-fulvous (apricot colour), except a faint dusky median stain and a small black spot at each side of tergites 3 and 4. The legs are red. Type in British Museum. See Ann. Mag. Nat. Hist., June, 1922, p. 662.

Halictus purnongensis Cockerell (M.).

Purnong, V. (S. W. Fulton), and north to Brisbane. Male 5 mm. long; head and thorax shining olive-green; abdomen piceous, with first tergite dark greenish; head very large, with toothed cheeks.

Halictus raymenti Cockerell (M.).

Sandringham, V. (Rayment). For characters, see tables. Female about 5.5 mm. long. Resembles *H. erythrurus*. Associated with this species is the Chloropid fly *Ephydroscinis raymenti* Curran.*

Halictus repertulus Cockerell.

Brisbane, Q. (Hacker). Male about 5.5 mm. long; black, moderately robust; nearly the apical half of clypeus very pale yellow; flagellum only moderately long, very obscure reddish beneath. The rufous tegulae distinguish it from *H. bursariae*; the head is not so broad as in *H. cambagei*, and the mesothorax is more regularly and distinctly punctured. It is smaller than *H. repertus*.

Halictus repertus Cockerell.

Near Melbourne, V. Also taken by Charles Darwin at Hobart, Tasmania. The male differs from *H. cambagei* by having the tarsi red, and the area of metathorax with evident ridges; it is larger than *H. isthmalis*, and has the ridges absent from apical part of area (not thus limited in *isthmalis*), and the tibiae dark (tibiae red in *isthmalis*). Length about 6.5 mm.

Halictus repraesentans Smith.

Hobart, Tasmania (J. J. Walker). Area of metathorax with strong regular striae. For other characters, see tables. For microscopical characters, see Entomologist, December, 1905, p. 302.

Halictus rowlandi Cockerell.

Kuranda, Q. (Turner). Type in British Museum. Female hardly 5 mm. long; thorax and legs entirely light rufofulvous, the coloration recalling that of the wasp *Pison melanocephalum* Turner, living in the same district.

Halictus rufibasis Cockerell.

National Park, Q. (Hacker). Type in Queensland Museum. Female about 5 mm. long; robust, with very broad abdomen; head and thorax shining black; abdomen with first tergite clear ferruginous, second broadly red basally; hind tibiae and tarsi with stiff black bristles.

Halictus ruficollis Friese.

Adelaide, S.A. Male 9 mm. long, the thorax red, except the black scutellum and metanotum; abdomen with tergites 1 to 3 reddish-yellow, 4 and 5 brown, 6 and 7 black; legs red, with yellow tarsi; wings dusky, with dark margin. From the description seems near *Parasphecodes aurantiacus* Ckll. Friese compares it with *H. pilicollis* Fr., which is *Parasphecodes basilautus* Ckll.

Halictus rufipes Smith.

Melbourne, V. All the femora rufous. This is *H. tertius* Dalla Torre.

* Curran describes this (Amer. Mus. Novitates, June 10, 1930) from the female. Rayment (Victorian Naturalist, March, 1931) describes the male of what must apparently be the same species as *Neoborborus speculabundus*, placing it in Borboridae.

Halictus rufoaeneus Friese (M.).

Sydney, N.S.W. Collected in the Botanic Gardens, 1897. Female 5 to 5.5 mm. long, like *H. luteoaeneus*, but smaller, with brown legs and reddish tarsi. Wings clear.

Halictus rufotinctus Cockerell (M.).

Brisbane, Q. (Hacker). Female 4 to 4.25 mm. long; robust, with short broad-oval abdomen; mesothorax and scutellum olive-green (in var. a. the mesothorax is dark blue-green); abdomen largely castaneous; legs black. Allied to *H. inclinans* Sm.

Halictus sanguinipes Cockerell.

Windsor, V. (French). Male about 8 mm. long; black, with bright chestnut-red legs; clypeus with a very broad pale yellow band; mandibles black; wings reddish. Known from *H. bicingulatus* by the clavate abdomen, the tegulae piceous with a rufo-testaceous spot, and the basal area of metathorax very long, irregularly wrinkled.

Halictus saycei Cockerell (M.).

Mackay, Q. (Turner). Type in British Museum. Female about 4.5 to 5 mm. long; thorax black, with the dull and granular mesothorax dark green; abdomen smooth and shining, wholly without bands; scape red basally, flagellum dark. Allied to *H. limatus*.

Halictus sculpturatus Cockerell.

Stradbroke I., Q. (Hacker). Male about 6.5 mm. long; black, moderately robust, the abdomen without hair-bands or patches; clypeus with a transverse cream-coloured band; mesothorax shining, strongly punctured, median groove strong, and on each side of it anteriorly oblique striae. Allied to *H. spenceri* Ckll., but mesothorax and area of metathorax quite different.

Halictus seductus Cockerell.

Windsor, V. (French). Also Sandringham, V., and Bridport, Tasmania. Female about 10 mm. long; black, robust, with greyish-white hair, mixed with fuscous on vertex and mesothorax. Resembles *H. repraesentans*, but easily separated by the mesothorax, which is roughened and strongly punctured, dull, with the disc somewhat shining. The wings are smoky hyaline, the stigma and nervures dusky ferruginous.

Halictus seminitens Cockerell.

Wyalcatchem, W.A. (Nicholson). Type in Australian Museum. Female about 7.3 mm. long; fairly robust, black, including mandibles, antennae and legs; face very broad. Very like *H. orbatus* Sm., *H. instabilis* Ckll., and *H. imitans* Ckll., but easily known by the contrasting polished and dull areas on mesothorax, and the dark tegulae.

Halictus semipolitus Cockerell.

Bribie I., Q. (Hacker). Also Brisbane and Tambourine Mtn. Female about 5.5 mm. long, black; tegulae dark reddish; wings strongly smoky, stigma dark brown. Close to *H. blackburni* Ckll., but mesothorax shining, especially posteriorly, the scattered punctures extremely minute and hardly visible; area of metathorax dull, covered with fine wrinkles.

Halictus semipolitus expulsus Cockerell.

Georgetown, Tasmania (Littler). Female with flagellum black (red at end in typical *H. semipolitus*); tegulae piceous or more or less reddish.

Halictus speculellus Cockerell.

Brisbane, Q. (Hacker). Female about 5 mm. long; black, with labrum and mandibles (except base) dull red; flagellum ferruginous beneath; tegulae clear rufo-testaceous. Very like *H. repertulus* Ckll. (male), but not its female, as *repertulus* has a distinctly punctured mesothorax. Also allied to *H. sturti* Ckll., but smaller, with more dusky wings, and different metathorax.

Halictus spenceri Cockerell.

Yallingup, W.A. (R. E. Turner). Type in British Museum. Male about 7 to a little over 8 mm. long; a large species of the group of *H. cambagei*, the apex of abdomen with a large, broad, rounded, bright ferruginous plate. The clypeus has a triangular creamy-white patch; antennae long, black.

Halictus sphecodoides Smith (M.).

Female with mesothorax duller than in *H. vitripennis* Sm.; abdomen with the apical part dark; stigma fuscous.

Halictus sphecodopsis Cockerell (M.).

Mackay, Q. (Turner). Type in British Museum. Male scarcely 4 mm. long; head and thorax yellowish green, the metathorax a bluer green; face broad, covered with yellowish hair; broad anterior margin of clypeus, labrum and mandibles (except ferruginous tips) cream-colour; antennae long, ferruginous, flagellum dusky above; legs clear orange-ferruginous; abdomen bright ferruginous, the apical third dusky.

Halictus stirlingi Cockerell.

Mackay, Q. (Turner). Type in British Museum. Female about 6.5 mm. long; very robust; abdomen with bands of dense fulvous tomentum at bases of second and third tergites. Related to the *H. bicingulatus* group, but known by the small size, dark legs, and peculiar sculpture of metathorax.

Halictus sturti Cockerell.

Mackay, Q. (Turner). Type in British Museum. *H. globularis* Friese is a synonym. Female a little over 6 mm. long; black, broad and robust, with scanty white hair; mesothorax shining, overlapping prothorax in front; hind spur of hind tibia with three little sharp teeth close together about the middle, but otherwise simple.

Halictus subcarus Cockerell (M.).

Halifax, Q. (Williams). Type in Museum of Comparative Zoology, Harvard. Mesothorax and scutellum bright prussian green, the former dull, the latter more shining, but not polished; tegulae clear fulvous; abdomen olive green. Length about 5 mm. Known from *H. pavonellus* Ckll. by the larger head, with more produced clypeus, green mesothorax and clear red hind tibiae.

Halictus subinclinans Cockerell (M.).

Launceston, Tasmania (Littler). Also Sandringham, V. Female 6.25 mm. long; mesothorax dark green, dullish; abdomen shining brownish black. Differs from *H. inclinans* by the greater size, darker tegulae and dark legs. The hind spur of hind tibia has a single large broadly rounded (subtruncate) tooth, and a low broad (wave-like) one beyond.

Halictus subplebeius Cockerell.

National Park, Q. (Hacker). Type in Queensland Museum. Male about 6.8 mm. long; black, rather robust, the abdomen broad for a male;

clypeus with a broad creamy white band. Resembles *H. plebeius* Ckll., but much larger, with dark tegulae and different metathorax.

Halictus suburbanus Cockerell (M.).

National Park, Q. (Hacker). Type in Queensland Museum. Female hardly 5 mm. long; mesothorax and scutellum dull emerald green; abdomen shining black. Near to *H. urbanus* Sm., but the mesothorax is larger and duller. Also near *H. williamsi* Ckll., but mesothorax more shining, and bluer green, and scutellum shining.

Halictus supralucens Cockerell.

Kalamunda, W.A. (R. E. Turner). Type in British Museum. Female about 6.5 mm. long; near *H. mediopolitus*, but sculpture of mesothorax entirely different (shining, with irregular large and small punctures); known from *H. orbatus* by the polished scutellum.

Halictus tarltoni Cockerell (M.).

Brighton, V. (Rayment). Female about 5.5 mm. long; black, with blue-green mesothorax and red abdomen; stigma clear but dull red; abdomen with a ventral scopa. Very close to *H. raymenti*, but anterior tibiae clear red in front, and abdomen with no basal dark patch. The dull clypeus separates it from *H. erythrurus*.

Halictus tasmaniae (Cockerell).

Hobart and St. Helens, Tasmania. Type in British Museum. Male about 5.5 mm. long; head and thorax black; legs bright ferruginous, marked with black; abdomen black basally and apically, with apical margin of first tergite, second except a median stain, and greater part of third chestnut red. Apical plate red, broadly truncate. Erroneously described under *Sphecodes* (1905), but transferred to *Halictus* in 1910.

Halictus tatei Cockerell (M.).

Mackay, Q. (Turner). Type in British Museum. Female about 5 mm. long; thorax black, with the mesothorax green and the tubercles ferruginous. Near to *H. sphaecodoides*, but middle tibiae red, and abdomen not black at base, though there is a black spot on each side.

Halictus tertius Dalla Torre.

Melbourne, V. Also Lake Hattah. This is *H. rufipes* Smith, pre-occupied. I formerly thought this a synonym of *H. bicingulatus*, but it has all the femora rufous; pubescence at base of second and third tergites fulvous. See also characters given in the key.

Halictus urbanus Smith (M.).

Widely distributed, from Champion Bay, W.A., to Port Darwin, N.T., and Sydney to Brisbane. Female with mesothorax peacock-green; abdomen shining; hind spur of hind tibia with three spines.

Halictus urbanus baudinensis Cockerell (M.)

Baudin I., N.W. (Australia) (J. J. Walker). Type in British Museum. Taken on The "Penguin" Expedition. Female about 5 mm. long; tibiae and tarsi, and apical third or fourth of femora, all bright ferruginous; stigma very dark reddish brown. The hind spur has two long spines.

Halictus urbanus lomatae Cockerell (M.).

Brisbane, Q. (Hacker). Female with mesothorax peacock-green; scutellum bright blue, highly polished; legs rufotestaceous; flagellum bright ferruginous beneath. Visits *Lomatia*.

Halictus urbanus stradbrokeensis Cockerell (M.).

Stradbroke and Brbie Islands, Q. Larger (female slightly over 6 mm. long), with black legs.

Halictus veronicae Cockerell (M.).

Sandringham, V. (Rayment). Female about 5.5 mm. long; shining olive-green; male with middle of mandibles, labrum and lower end of clypeus light yellow. The male suggests *H. purnongensis*, but the head is small, and abdomen green, light red at apex.

Halictus victoriae Cockerell (M.).

Sandringham, V. (Rayment). Female about 5.5 mm. long; head, thorax and abdomen bluish green, the metathorax almost black, the very short clypeus dark purplish; mesothorax polished, brilliant green, the anterior middle almost steel blue.

Halictus victoriellus Cockerell (M.).

Sandringham, V. Female a little over 6 mm. long; like *H. imitans*, but smaller and less robust, with flagellum dull red beneath, mesothorax more shining and finely punctured, stigma testaceous, hind margins of tergites suffused with reddish. The hair of venter is short and not abundant (it is abundant in *H. imitans*).

Halictus viridarii Cockerell.

National Park, Q. (Hacker). Type in Queensland Museum. Male about 7 mm. long, black, rather stout, with a broad transverse pale yellow band on clypeus; legs black. Resembles *H. excusus* Ckll., but area of metathorax (large, shining apically, covered with fine plicae) and abdomen quite different. The abdomen has patches of greyish hair at lateral bases of second and third tergites; in *H. excusus* it is without hair-bands or spots.

Halictus viridinitens Friese (M.).

Sydney, N.S.W. Female 7 to 8 mm. long, shining blue-green. Legs and antennae brown, the flagellum red beneath. Abdomen bluer than thorax. Wings clear.

Halictus vitripennis Smith (M.).

Champion Bay, W.A., but *H. sphecodoides* var. *mackayensis* Friese, from Mackay, Q., is the same. Female with mesothorax very shiny; abdomen red, with only first tergite darkened. The male is described by Rayment in Jn. Roy. Soc. W. Australia, xvii., p. 170. Length about 4.7 mm., face entirely covered with cream-coloured appressed small scale-like hairs; clypeus clear fulvous. The female var. a. has the first tergite red, with a transverse dark mark.

Halictus vividus Smith (M.).

Swan River, W.A. I cannot distinguish this from *H. floralis* Smith. Rayment (Jn. Roy. Soc. W. Australia, xvii., p. 167) treats it as a valid species, and says it is very close to *H. victoriae* Ckll., but area of metathorax is covered with fine striae, without the wide smooth shining rim of *H. victoriae*.

Halictus warburtoni Cockerell.

Hobart, Tasmania (J. J. Walker). Type in British Museum. Male about 10 mm. long; black, the pubescence dull white, with some black or dark fuscous on vertex and dorsum of abdomen; clypeus with rather more than anterior half light lemon-yellow. Compared with *H. lanarius* Sm.,

the pubescence is much less abundant; the head, seen from in front, is broader and more triangular; the stigma is much larger; and the area of metathorax is quite different.

Halictus waterhousei Cockerell.

Woodford, N.S.W. (G. A. Waterhouse). Type in British Museum. Female 10 mm. long; male the same, but more slender, the very long flagellum entirely black. Allied to *H. musicus*, but with rufo-testaceous tegulae, and the arrangement of hair on thorax, and sculpture of mesothorax and abdomen different. The anterior wings are suffusedly blackened at apex.

Halictus williamsi Cockerell (M.).

Halifax and Babinda, Q. (Williams). Type in Museum of Comparative Zoology, Harvard. Mesothorax and scutellum dull, yellowish green; metathorax dark green, the basal area coarsely plicate, with heavy obtuse margin; femora black, knees, tibiae and tarsi bright ferruginous; abdomen shining black, hind margins of tergites coppery reddish. Length about 5.5 mm. (female). Male hardly 3.5 mm. long, more slender, antennae black, flagellum not very long; no light mark on clypeus. Known from *H. mundulus* Ckll. by the dark stigma. Male known from *H. hackeriellus* Ckll. by the red tibiae, and dull dark front of head.

Halictus willsi Cockerell.

"New Holland." Type in British Museum, which received it in 1844. Female about 6 mm. long; black, with dull white pubescence; tegulae shining dark rufous; stigma and nervures rufous; area of metathorax very finely striate; hind spur of hind tibia with a broad, strongly divergent blunt tooth about the end of its first third, and beyond that only a single broad low rounded lamella. For microscopic characters, see Entomologist, 1906, p. 56.

Halictus woodsi Cockerell (M.).

Cooktown, Q. (Turner). Type in British Museum. Also Port Darwin, N.T. Female about 6.5 mm. long, the head narrower than in *H. flindersi*. The male (with red tibiae) differs from *H. dampieri* by the shorter flagellum and bluish abdomen.